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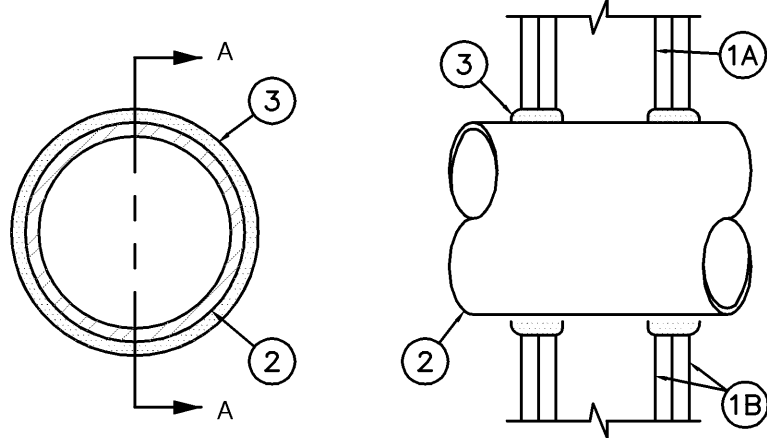
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DWG FILE: P:\000\0402_Ascend Learning\Drawings\402\0402.dwg USER: fbbettif PLOT DATE/TIME: 12/20/2011 4:17pm



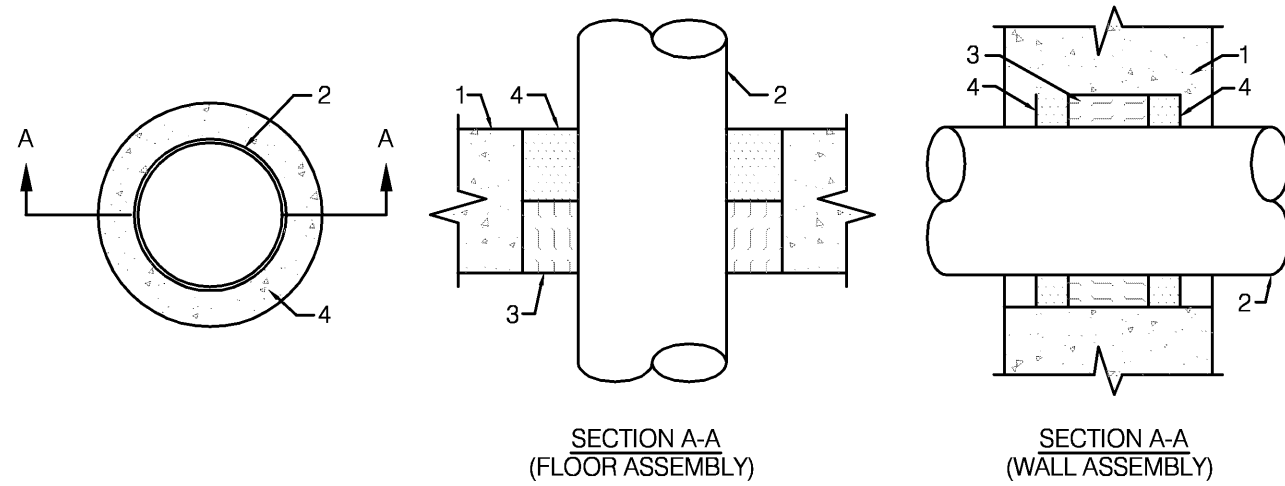
SYSTEM NO. WL1001
(FORMERLY SYSTEM NO. 147)
F RATINGS - 1,2,3 AND 4 HR. (SEE ITEM 2 & 3)
T RATINGS - 0,1,2,3 AND 4 HR. (SEE ITEM 3)

- WALL ASSEMBLY - THE 1, 2, 3 OR 4 HR FIRE-RATED GYPSUM WALLBOARD/STUD WALL ASSEMBLY SHALL BE CONSTRUCTED OF THE MATERIALS AND IN THE MANNER DESCRIBED IN THE INDIVIDUAL U300 OR U400 SERIES WALL OR PARTITION DESIGNS IN THE UL FIRE RESISTANCE DIRECTORY AND SHALL INCLUDE THE FOLLOWING CONSTRUCTION FEATURES:
 - STUDS-WALL FRAMING MAY CONSIST OF EITHER WOOD STUDS (MAX. 2 HR. FIRE RATED ASSEMBLIES) OR STEEL CHANNEL STUDS. WOOD STUDS TO CONSIST OF NOM 2 BY 4 IN. LUMBER SPACED 16 IN. OC WITH NOM 2 BY 4 IN. LUMBER END PLATES AND CROSS BRACES. STEEL STUDS TO BE MIN. 3-5/8 IN. WIDE BY 1-3/8 IN. DEEP CHANNELS SPACED MAX. 24 IN O.C.
 - WALLBOARD, GYPSUM *NOM 1/2 OR 5/8 IN. THICK, 4 FT WIDE WITH SQUARE OR TAPERED EDGES. THE GYPSUM WALLBOARD TYPE, THICKNESS, NUMBER OF LAYERS, FASTENER TYPE AND SHEET ORIENTATION SHALL BE AS SPECIFIED IN THE INDIVIDUAL U300 OR U400 SERIES DESIGN IN THE UL FIRE RESISTANCE DIRECTORY. MAX DIAM OF OPENING IS 13-1/2 IN.
- PIPE OR CONDUIT - NOM 12 IN. DIAM (OR SMALLER) SCHEDULE 10 (OR HEAVIER) STEEL PIPE, NOM 6 IN. DIAM (OR SMALLER) STEEL CONDUIT, NOM 4 IN. DIAM (OR SMALLER) STEEL ELECTRICAL METALLIC TUBING OR TYPE L OR (OR HEAVIER) COPPER TUBING OR NOM 1 IN. DIAM (OR SMALLER) FLEXIBLE STEEL CONDUIT. WHEN COPPER PIPE OR FLEXIBLE STEEL CONDUIT IS USED, MAX F RATING OF FIRESTOP SYSTEM (ITEM 3) IS 2 HR. STEEL PIPES OR CONDUITS LARGER THAN NOM 4 IN. DIAM MAY ONLY BE USED IN WALLS CONSTRUCTED USING STEEL CHANNEL STUDS. A MAX OF ONE PIPE OR CONDUIT IS PERMITTED IN THE FIRESTOP SYSTEM. PIPE OR CONDUIT TO BE INSTALLED NEAR CENTER OF STUD CAVITY WIDTH AND TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF WALL ASSEMBLY.
- FILL, VOID OR CAVITY MATERIAL * CAULK-CAULK FILL MATERIAL INSTALLED TO COMPLETELY FILL ANNULAR SPACE BETWEEN PIPE OR CONDUIT AND GYPSUM WALLBOARD AND WITH A MIN. 1/4 IN. DIAM BEAD OF CAULK APPLIED TO PERIMETER OF PIPE OR CONDUIT AT ITS EGRESS FROM THE WALL. CAULK INSTALLED SYMMETRICALLY ON BOTH SIDES OF WALL ASSEMBLY. THE HOURLY F RATING OF THE FIRESTOP SYSTEM IS DEPENDENT UPON THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED. AS SHOWN IN THE FOLLOWING TABLE. THE HOURLY T RATING OF THE FIRE-STOP SYSTEM IS DEPENDENT UPON THE TYPE OF SIZE OF THE PIPE OR CONDUIT AND THE HOURLY FIRE RATING OF THE WALL ASSEMBLY IN WHICH IT IS INSTALLED, AS TABULATED BELOW:

MAX PIPE OR CONDUIT DIAM IN.	ANNULAR SPACE IN.	F RATING HR	T RATING OR
1	0 TO 3/16	1 OR 2	0+, 1 OR 2
1	1/4 TO 1/2	3 OR 4	3 OR 4
4	0 TO 1/4	1 OR 2	0
6	1/4 TO 1/2	3 OR 4	0
12	3/16 TO 3/8	1 OR 2	0

+ WHEN COPPER PIPE IS USED, T RATING IS 0 HR.
MINNESOTA MINING & MFG. CO.-TYPE CP-25 SL, CP-25 N/S, CP-25 WB, CP-25 WB+

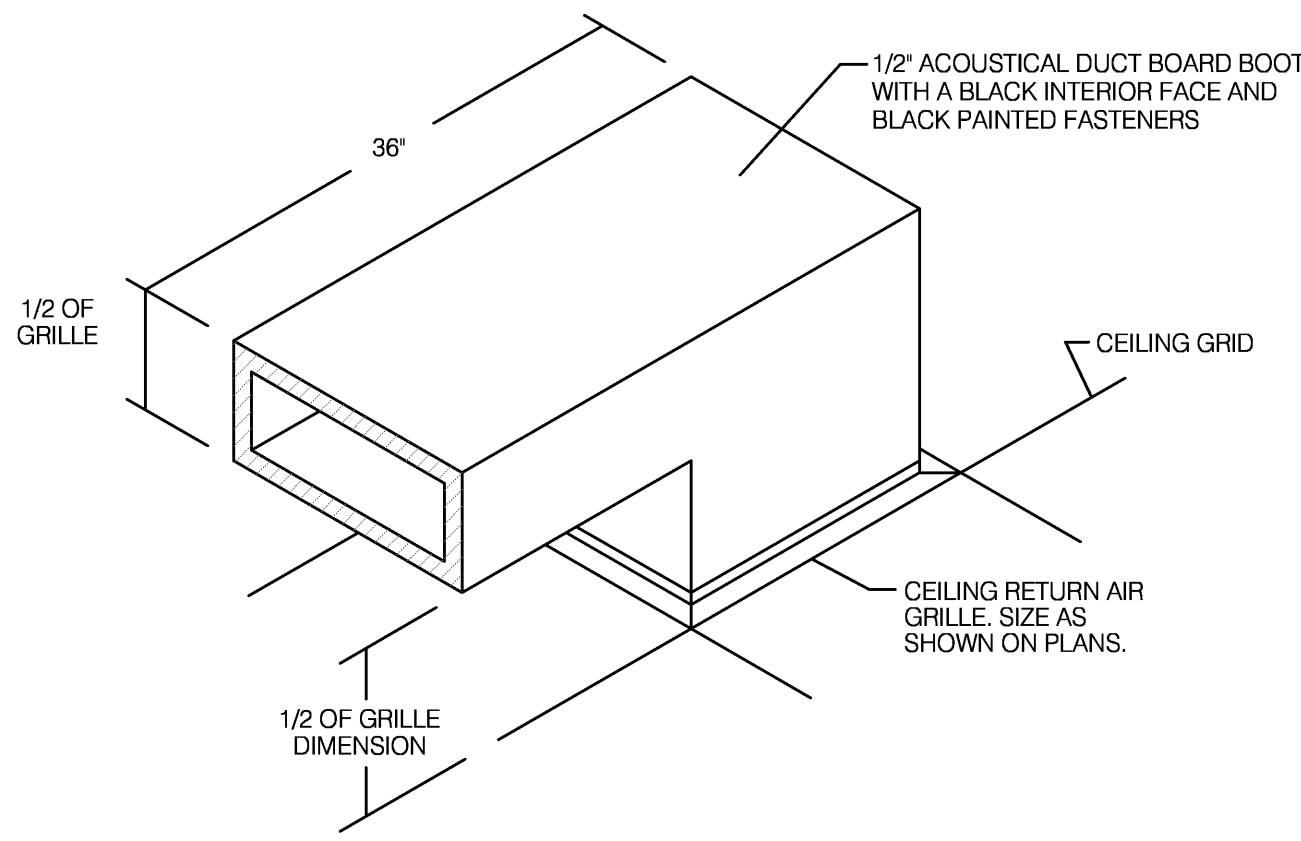
* BEARING THE UL CLASSIFICATION MARKING.



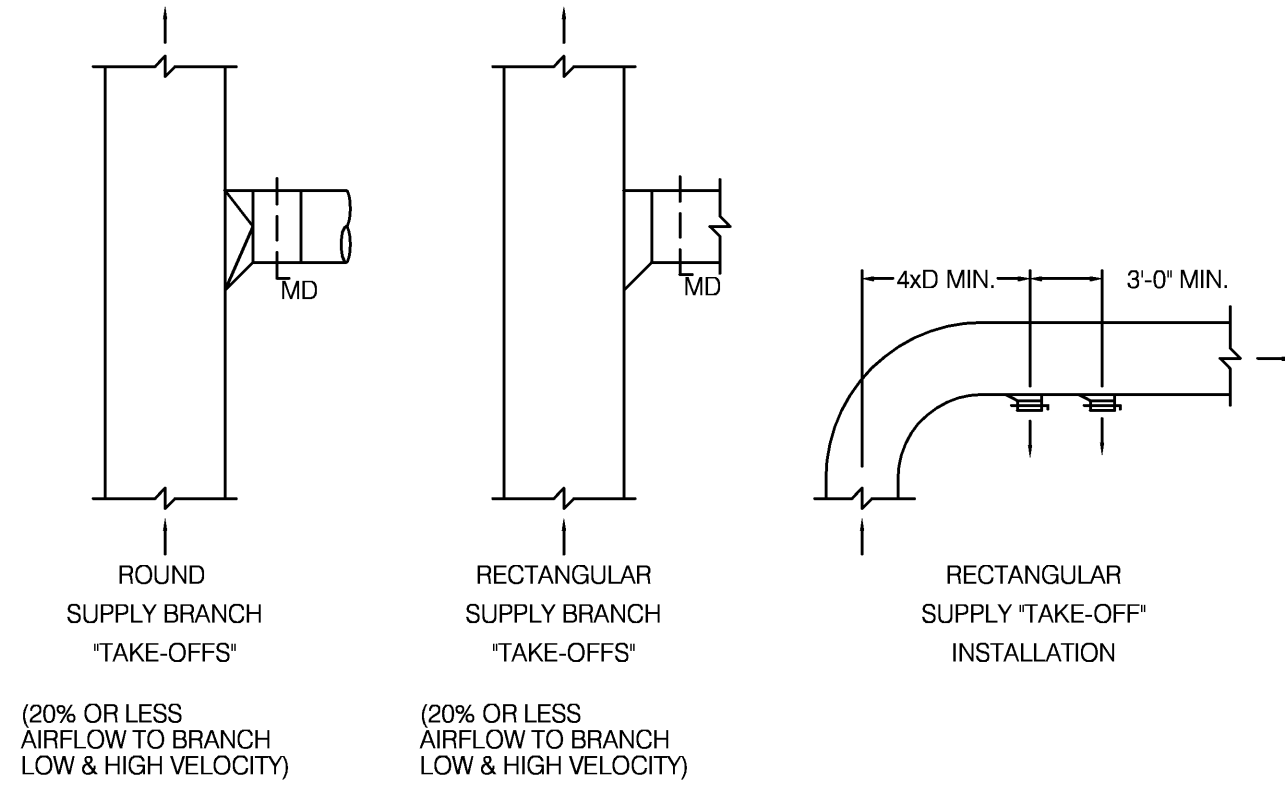
SYSTEM NO. CAJ1012
(FORMERLY SYSTEM NO. 129)
F RATINGS - 1 HR.
T RATING - 0 HR.

- FLOOR OR WALL ASSEMBLY - MINIMUM 5" THICK REINFORCED NORMAL WEIGHT (100 - 150 PCF) CONCRETE. WALL MAY ALSO BE CONSTRUCTED OF ANY UL CLASSIFIED CONCRETE BLOCKS*. MAXIMUM DIAMETER OF OPENING IS 6".
SEE CONCRETE BLOCKS (CAZT) CATEGORY IN THE FIRE RESISTANCE DIRECTORY FOR NAMES OF MANUFACTURERS.
- THROUGH PENETRANTS - ONE METALLIC PIPE OR CONDUIT TO BE CENTERED WITHIN THE FIRESTOP SYSTEM. A NOMINAL ANNULAR SPACE OF 3/4" IS REQUIRED WITHIN THE FIRESTOP SYSTEM. PIPE OR CONDUIT TO BE RIGIDLY SUPPORTED ON BOTH SIDES OF FLOOR OR WALL ASSEMBLY. THE FOLLOWING TYPES AND SIZES OF METALLIC PIPES OR CONDUITS MAY BE USED:
 - STEEL PIPE - NOMINAL 4" DIAMETER (OR SMALLER) SCHEDULE 5 (OR HEAVIER) STEEL PIPE
 - CONDUIT - NOMINAL 4" DIAMETER (OR SMALLER) ELECTRICAL METALLIC TUBING OR STEEL CONDUIT.
- PACKING MATERIAL - MINIMUM 3" THICKNESS OF MINIMUM 4.4 PCF MINERAL WOOL BATT INSULATION FIRMLY PACKED INTO OPENING AS A PERMANENT FORM. PACKING MATERIAL TO BE RECESSED FROM TOP SURFACE OF FLOOR AS REQUIRED TO ACCOMMODATE THE REQUIRED THICKNESS OF FILL MATERIAL. PACKING MATERIAL TO BE CENTERED IN WALL'S MID-DEPTH AND RECESSED TO ALLOW FOR INSTALLATION OF FILL MATERIAL.
- FILL, VOID OR CAVITY MATERIAL * - SEALANT OR FOAM - MINIMUM 1/2" THICKNESS OF FILL MATERIAL APPLIED WITHIN ANNULUS, FLUSH WITH TOP SURFACE OF FLOOR. IN WALL, FILL MATERIAL TO BE APPLIED ON EACH SIDE OF PACKING MATERIAL. FOAMED SILICONE TO BE INSTALLED AS DESCRIBED IN THE MANUFACTURERS APPLICATION INSTRUCTIONS AT A DENSITY OF 14 PCF MINIMUM TO 21 PCF MAXIMUM. THE THICKNESS OF FILL MATERIAL IS DEPENDENT UPON THE TYPE OF FILL MATERIAL AS SHOWN IN THE TABLE BELOW.

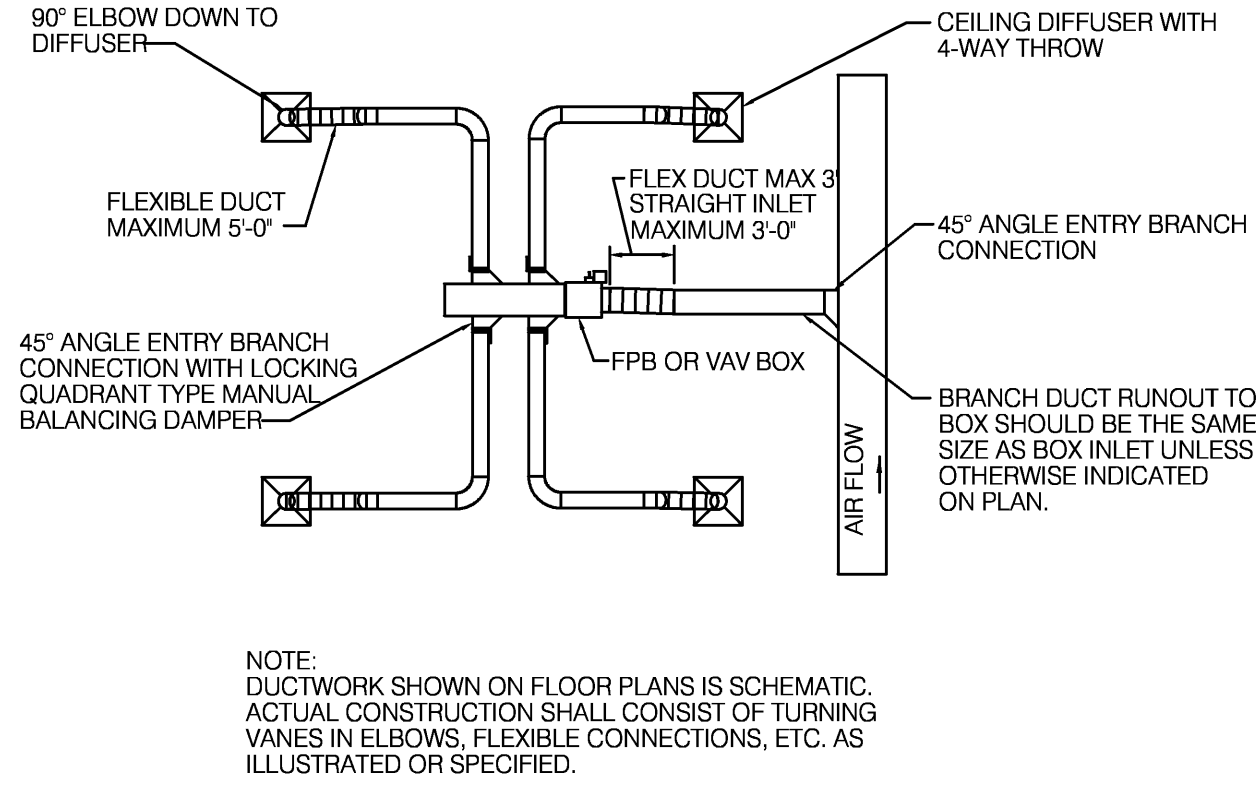
FILL MATERIAL IDENTIFICATION	MINIMUM THICK OF FILL MATERIAL, (IN.)
TYPE FS FOAM	1
TYPE FS SEALANT OR FS SEALANT SL	1/2
DOW CORNING CORP. - TYPES FS SEALANT, FS SEALANT SL (FLOOR ONLY) OR FS FOAM	
* BEARING THE UL CLASSIFICATION MARKING.	



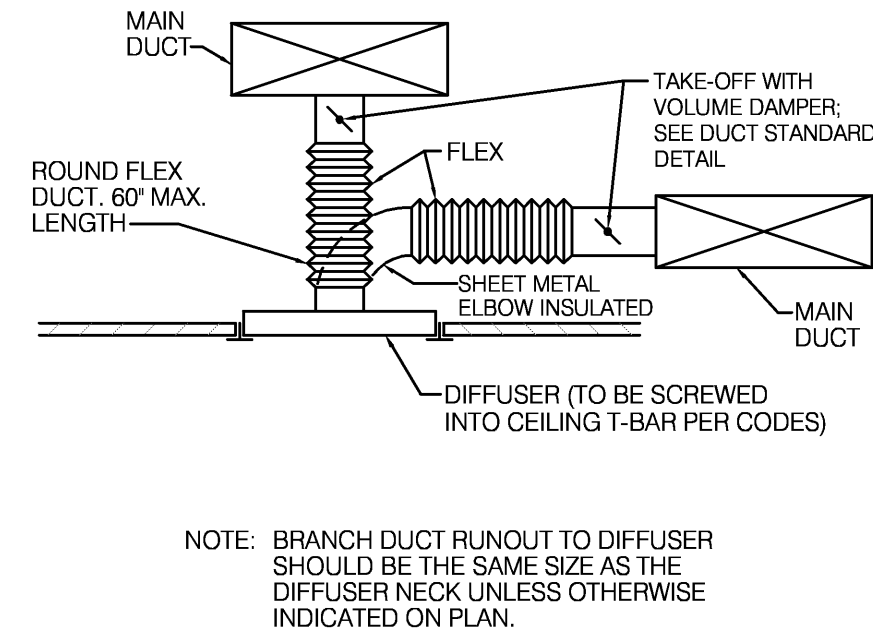
1 RETURN AIR BOOT DETAIL
NO SCALE



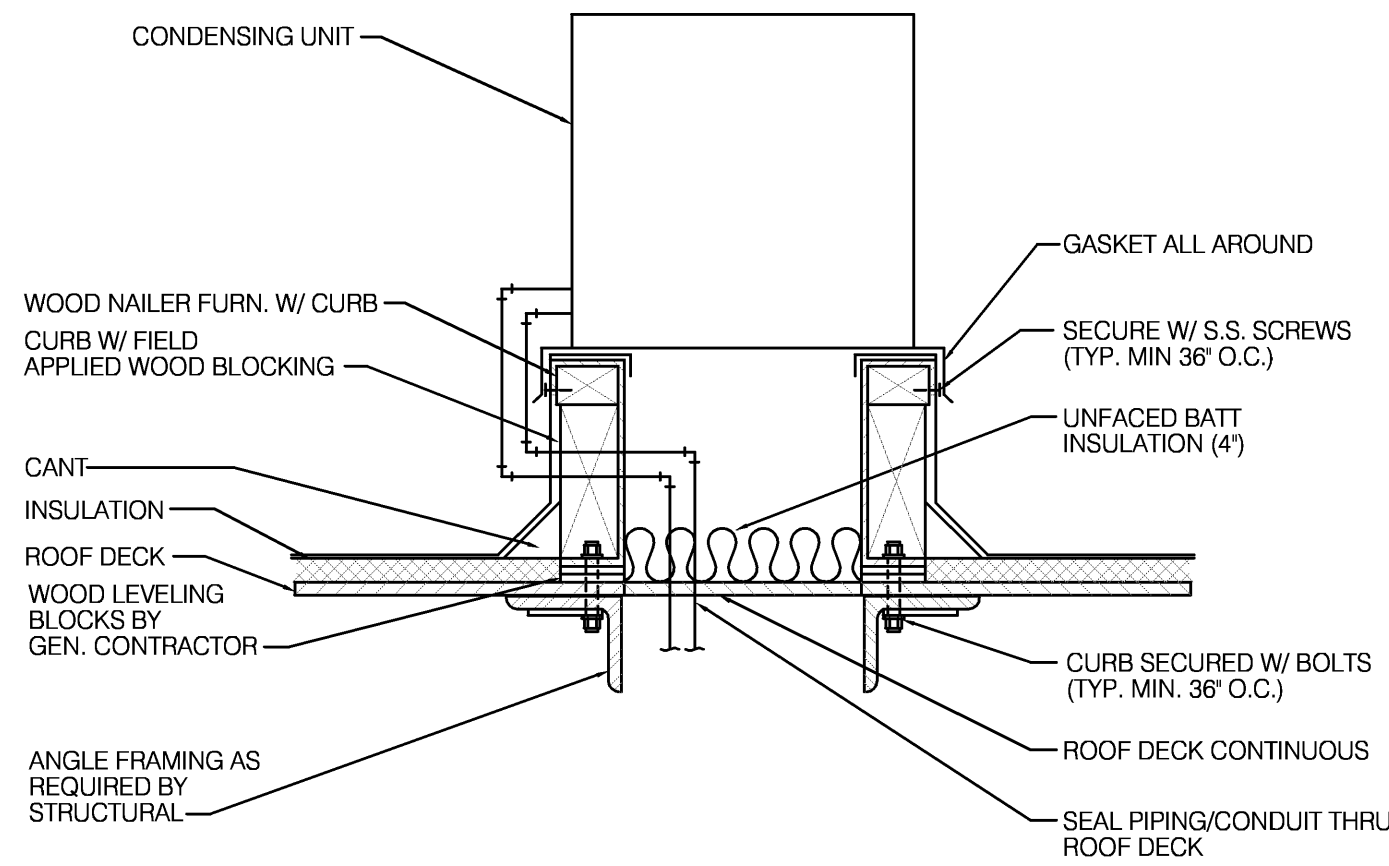
4 DUCT STANDARDS
NO SCALE



2 TYPICAL DUCTWORK LAYOUT
NO SCALE



5 DIFFUSER DETAIL
NO SCALE



4 CONDENSING UNIT ROOF CURB DETAIL
NO SCALE

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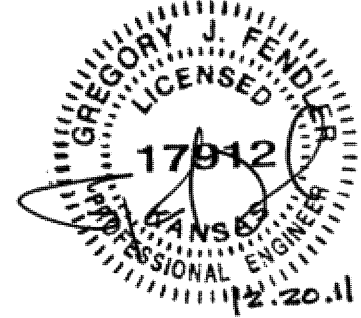
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11161 Overbrook Road
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Two Hallbrook Place

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Lenexa, KS 66215
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1730 Walnut Street
Kansas City, MO 64108
816-221-1411

Lankford
+ associates
Consulting Engineers, Inc.
1730 Walnut Street
Kansas City, Missouri 64108
816.221.1411
Fax: 816.221.1429
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L+A Project No. 4042

KEY PLAN

Drawn By RMF, JDB, SMP
Checked By GJF

MECHANICAL
DETAILS

81.01

Project Number: 2011.250

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